

FIG. 2 PRIOR ART

FIG. 3A PRIOR ART

POSITION IN PRECEDING FRAME IS INDICATED WITH SCREEN

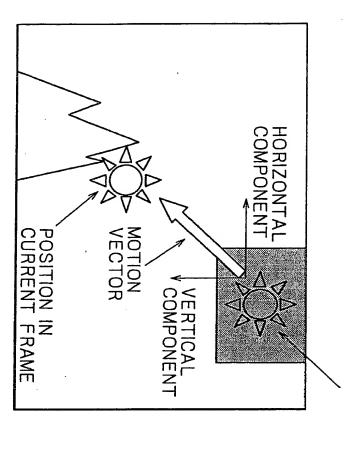
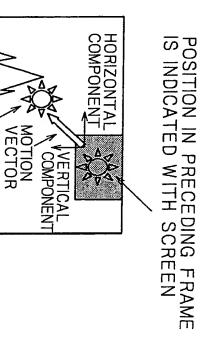


FIG. 3B PRIOR ART



POSITION IN CURRENT FRAME

FIG. 4
PRIOR ART

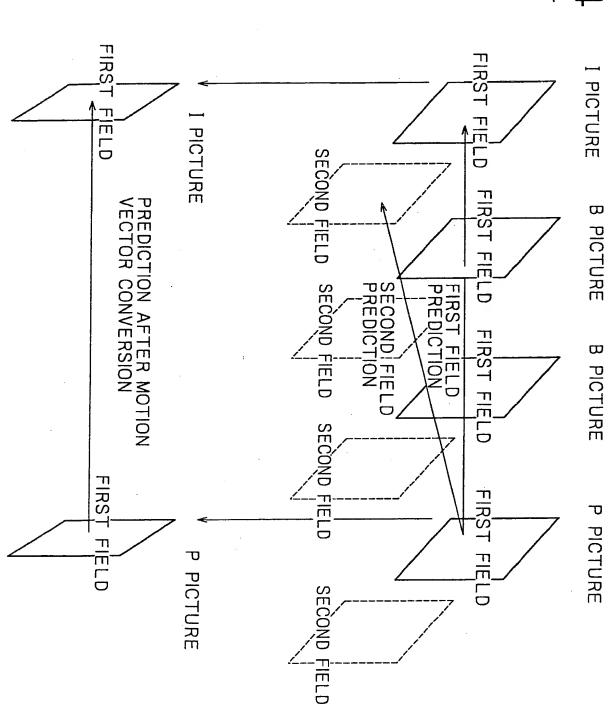


IMAGE SIZE ADJUSTMENT FLAG 3 SIZE AND n/2
ARE MULTIPLES
OF 16 m/2 SUPPLEMENT OF PIXELS 8 REMOVAL OF PIXELS YES m/2-8 PIXELS m/2+8 PIXELS n/2 PIXELS 8 PIXELS INDICATED
WITH SCREEN IS
SUPPLEMENTED.
IMAGE OF m/2+8
PIXELS IS OUTPUTTED IMAGE PORTION OF SURPLUS 8 PIXELS INDICATED WITH SCREEN ARE REMOVED AND IMAGE OF m/2-8
PIXELS IS OUTPUTTED IMAGE OF PIXELS OF m/2 COLUMNS AND n/2 ROWS ARE OUTPUTTED TEMPORARY

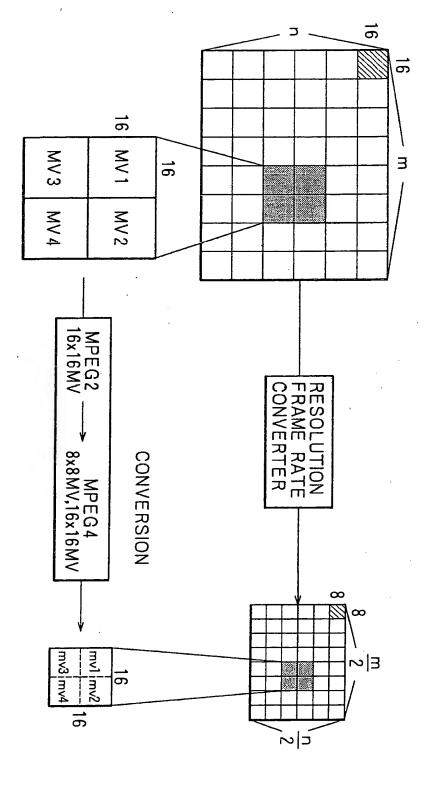
FIG. 5 PRIOR ART

FIG. 6A PRIOR ART

FIG.6B PRIOR ART

IMAGE DECODED BY MPEG2 DECODING SYSTEM

IMAGE CODED BY MPEG4



BEFORE RESOLUTION CONVERSION

AFTER RESOLUTION CONVERSION

MPEG2 MOTION VECTOR IMAGE SIZE, ETC. MPEG2 16x16MV MPEG4 8x8MV ∞ CONVERSION APPARATUS BEFORE MODIFI-CATION MPEG4 8x8MV 0 IMAGE SIZE
ADJUSTMENT
FLAG BASED
MOTION VECTOR
ADJUSTER MPEG4 8x8MV 16×16MV= IMAGE SIZE ADJUSTMENT FLAG 9 NUMBER OF 8x8MV≠0 MPEG2 16x16MV Σ;=0 8×8MVi J8x8MV LBC SUITABLE FOR IMAGE SIZE 8x8MV SUITABLE FOR IMAGE SIZE CONVERSION APPARATUS MOTION VECTO MODIFIER FOR MPEG2 INTRA-MACRO BLOCK **VECTOR** MPEG4 16x16MV MPEG4 8x8MV

 $-|G_7|$ PRIOR ART

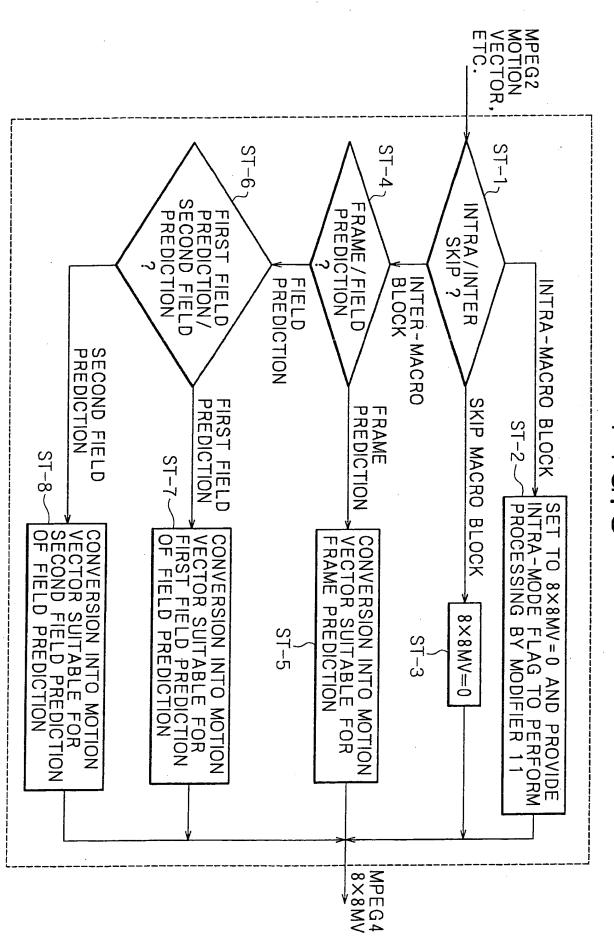


FIG. 8 PRIOR ART

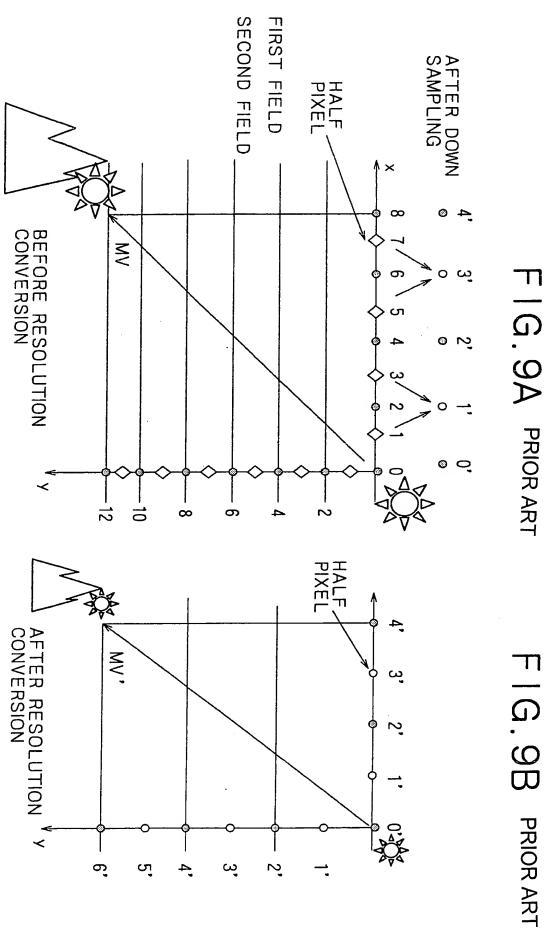


FIG.9B PRIOR ART

FIG. 10 PRIOR ART

REMAINDER WHEN MOTION VECTOR MV BEFORE CONVERSION IS DIVIDED BY 4	0		2	ယ
MOTION VECTOR AFTER CONVERSION	[MV/2]	[MV/2]+1	[MV/2]	[MV/2]

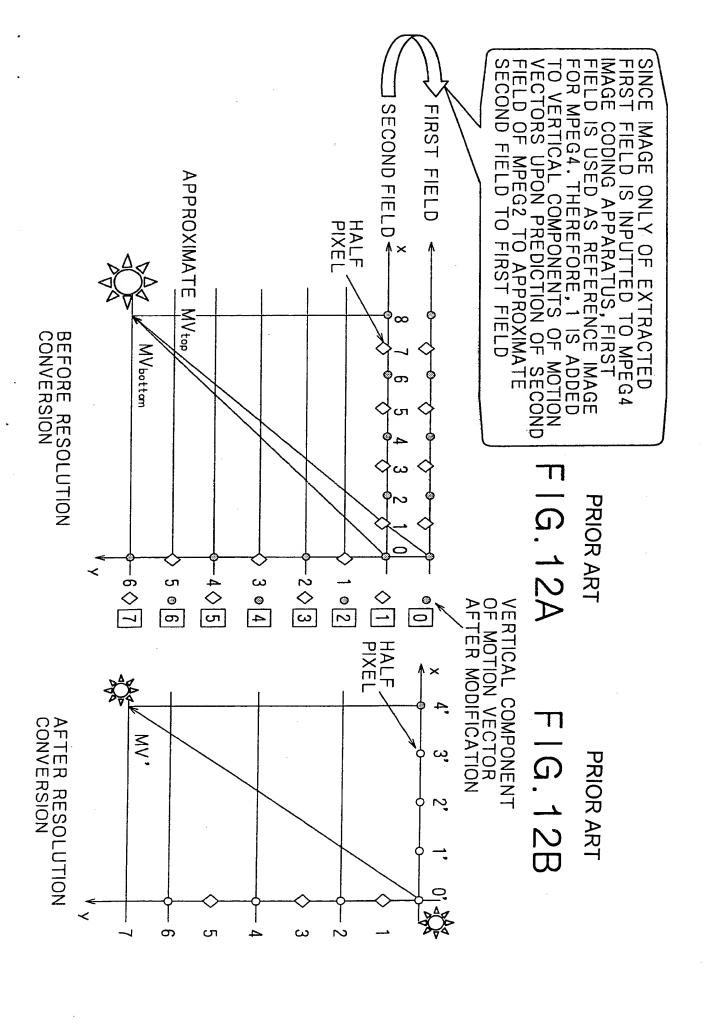
[MV/2] REPRESENTS INTEGER PART WHEN MV IS DIVIDED BY 2

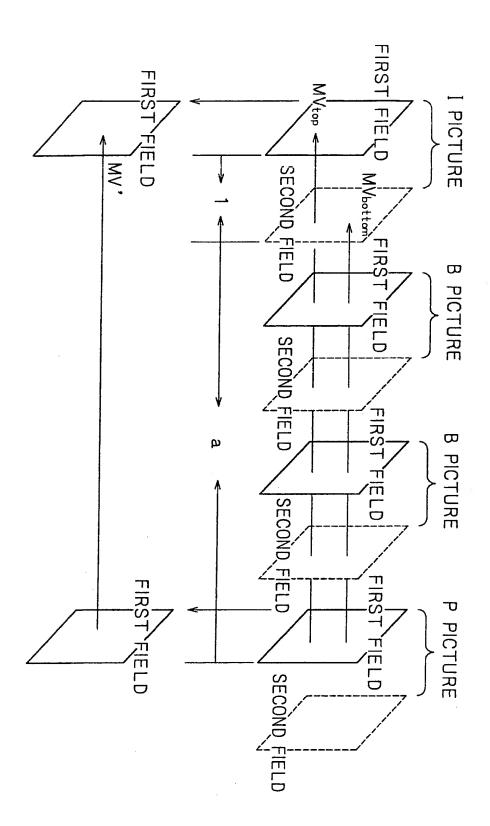
BEFORE DOWN X SAMPLING AFTER DOWN SAMPLING Top Field HALF, PIXEL <u>,</u> BEFORE RESOLUTION CONVERSION \leq တ တ ഗ ယ HALF, PIXEL AFTER RESOLUTION CONVERSION M√, ယ္ σ വ 2 ယ

FIG. 11A PRIOR ART

FIG. 11B

PRIOR ART





F | G. 13 PRIOR ART

IMAGE SIZE NPIXELS) MPEG4 BEFORE MODIFICATION IMAGE SIZE ADJUSTMENT FLAG ST-137 ST-11 ST-12-AND n/2

BOTH MULTIPLES

OF 16 ? PIXELS TO BE PIXELS TO BE REMOVED NO 8 YES YES YES OUTPUT 8×8MV EXCEPT 8×8MV OF REMOVED 8 PIXELS MPEG4

FIG. 14 PRIOR ART

MPEG4 8×8MV SUITABLE FOR IMAGE SIZE INTRA-MODE FLAG 5 8×8MV WHICH IS INTRA IN MPEG2=16×16MV $\stackrel{\wedge}{\mathsf{PR}}$ MPEG4 16×16MV MPEG4 8×8MV

FIG. 15 PRIOR ART

VECTOR,
IMAGE
SIZE,
MACRO
BLOCK
INFORMATION MPEG2 MOTION MPEG2 16x16MV MPEG4 8x8MV MACRO BLOCK INFORMATION BUFFER CONVERSION APPARATUS 4 AFTER MODIFI-CATION MPEG4 8x8MV IMAGE SIZE
ADJUSTMENT
FLAG BASED
MOTION VECTOR
ADJUSTER MPEG4 8x8MV IMAGE SIZE ADJUSTMENT FLAG $\overline{\omega}$ ഗ MPEG4 16x16MV J8x8MV LBLC SUITABLE FOR IMAGE SIZE SET **CONVERSION** 8x8MV SUITABLE FOR IMAGE SIZE MOTION VECTOR MODIFIER FOR MPEG2 INTRA-MACRO В 6 MPEG4 16x16MV MPEG4 8x8MV

FIG. 16 PRIOR ART

SECOND FIELD FIRST FIELD AFTER DOWN SAMPLING HALF PIXEL BEFORE RESOLUTION CONVERSION \leq FIG. 17A PRIOR ART ယ္ 12 0 ∞ တ HALF, PIXEL AFTER RESOLUTION CONVERSION FIG. 17B PRIOR ART **₹** ယ္ တ္ ယ္ 2 വ്

FIG. 18 PRIOR ART

[MV/2]	[MV/2]+1	[MV/2]	[MV/2]	MOTION VECTLE AFTER CONVERSION
ω	2	1	0	REMAINDER WHEN MOTION VECTOR MV BEFORE CONVERSION IS DIVIDED BY 4

[MV/2] REPRESENTS INTEGER PART WHEN MV IS DIVIDED BY 2

FIRST FIELD AFTER DOWN SAMPLING HALF, PIXEL @ ~ BEFORE RESOLUTION CONVERSION ₹ ၀ ယ္ခ တ ഗ ယ HALF, AFTER RESOLUTION CONVERSION **√**, . თ ഗ ယ 2

FIG. 19B PRIOR ART

FIG. 19A PRIOR ART

IMAGE CODING APPARATUS, FIFELD IS USED AS REFERENCE FOR MPEG4. THEREFORE, 1 IS TO VERTICAL COMPONENTS OVECTORS UPON PREDICTION OF MPEG2 TO APPROXING SECOND FIELD TO FIRST FIELD SINCE FIRST SECOND FIELD * FIRST FIELD IMAGE APPROXIMATE MVtop ONLY OF AS REFERENCE IMAGE
EREFORE, 1 IS ADDED
OMPONENTS OF MOTION
PREDICTION OF SECOND
2 TO APPROXIMATE
TO FIRST FIELD HALF PIXEL ∞ FIRST O MPEG4 BEFORE RESOLUTION CONVERSION MVbottom FIG. 20A PRIOR ART $-2 \diamondsuit \boxed{3}$ $-6 \diamondsuit \boxed{7}$ 5 © 6 4 🔷 5 3 © 4 _ ⊚ |2 0 VERTICAL COMPONEN OF MOTION VECTOR AFTER MODIFICATION HALF, ON VECTOR AFTER RESOLUTION CONVERSION FIG. 20B </r> PRIOR ART ယ့ \sim < თ ഗ ယ

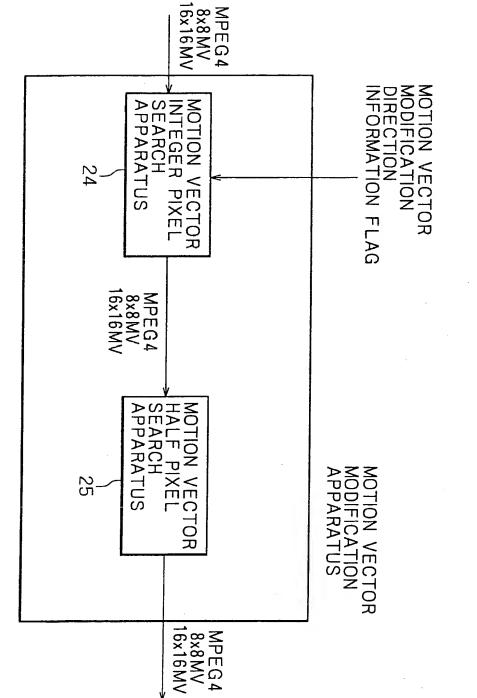
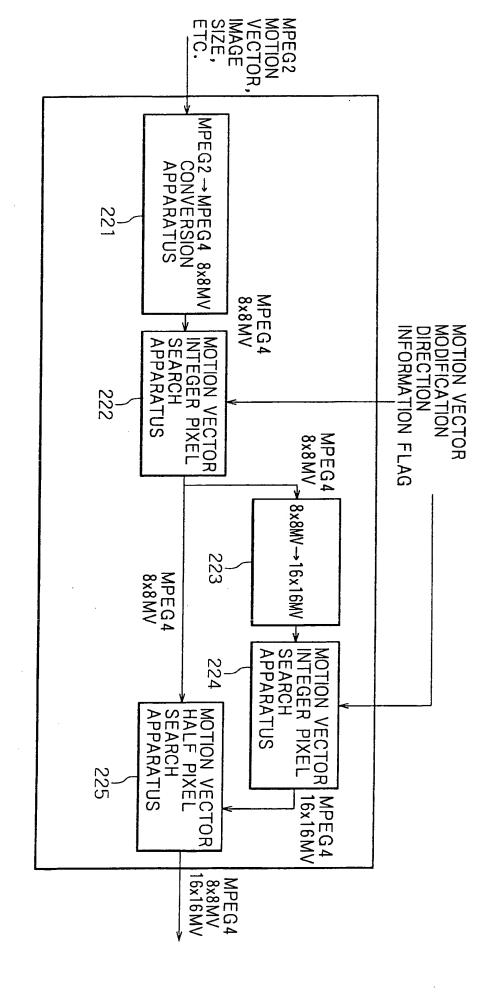


FIG. 21 PRIOR ART

FIG. 22 PRIOR ART



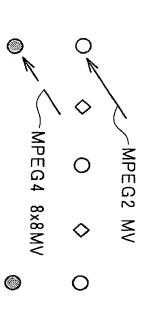
MOTION VECTOR CONVERSION APPARATUS

- O MPEG2 INTEGER PIXEL @ MPEG4 INTEGER PIXEL
- ♦ MPEG2 HALF PIXEL

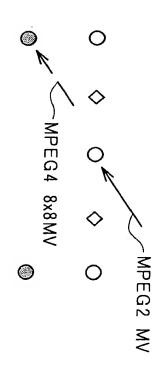
FIG. 23A PRIOR ART

FIG. 23B PRIOR ART

MODIFICATION FROM MPEG2 INTEGER PIXEL TO MPEG4



MODIFICATION FROM MPEG2 INTEGER PIXEL TO MPEG4 INTEGER PIXEL OF FORWARD DIRECTION



MOTION VECTOR FORWARD DIRECTION

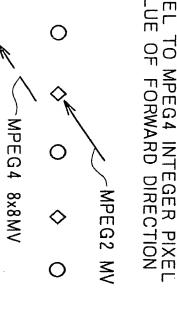
MOTION VECTOR FORWARD DIRECTION

- 0 MPEG2 INTEGER PIXEL @ MPEG4 INTEGER PIXEL
- MPEG2 HALF PIXEL

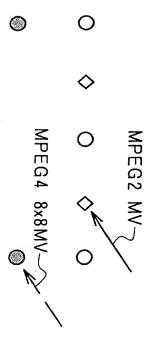
F IG. 24A PRIOR ART

FIG. 24B PRIOR ART

MODIFICATION FROM MPEG2 INTEGER PIXEL TO MPEG4 INTEGER PIXEL VALUE OF FORWARD DIRECTION



MODIFICATION FROM MPEG2 INTEGER PIXEL TO MPEG4 INTEGER PIXEL VALUE OF REVERSE DIRECTION



MOTION VECTOR FORWARD DIRECTION

MOTION VECTOR FORWARD DIRECTION

FIG. 25

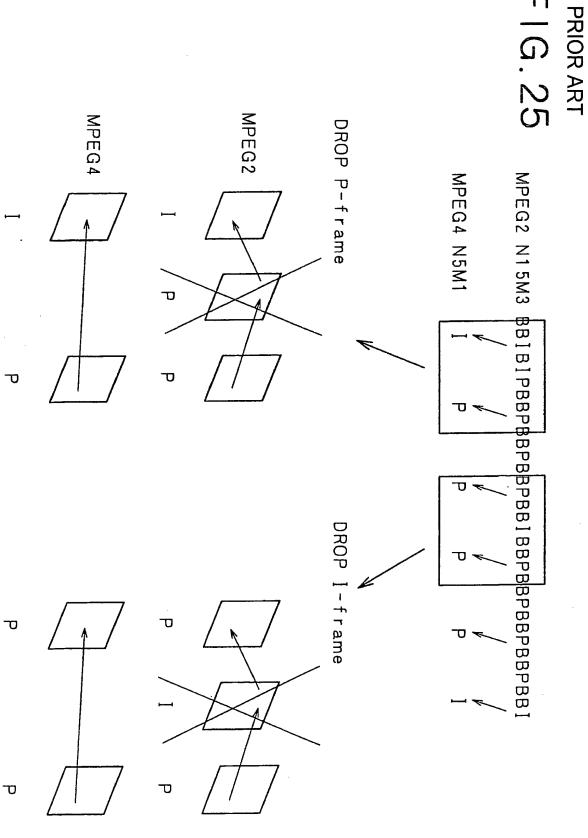


FIG. 26 PRIOR ART

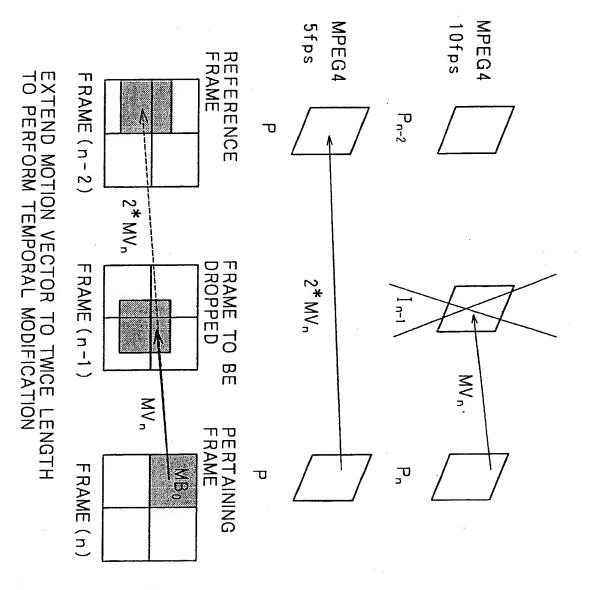
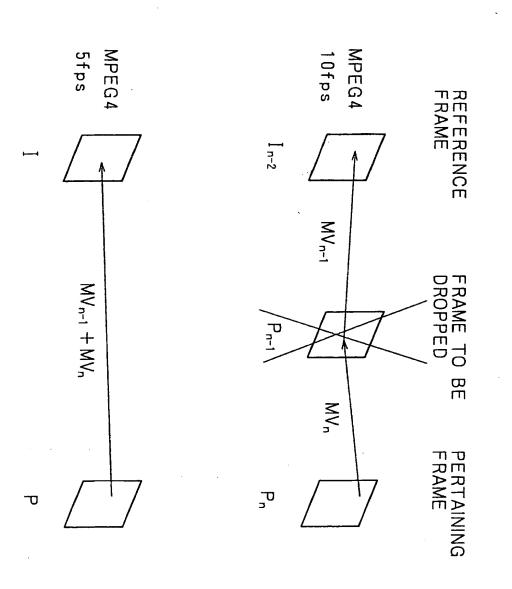
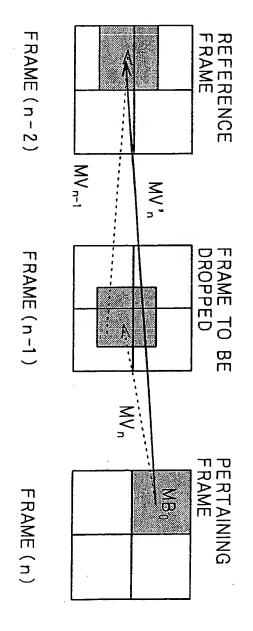


FIG. 27 PRIOR ART



F | G. 28 PRIOR ART

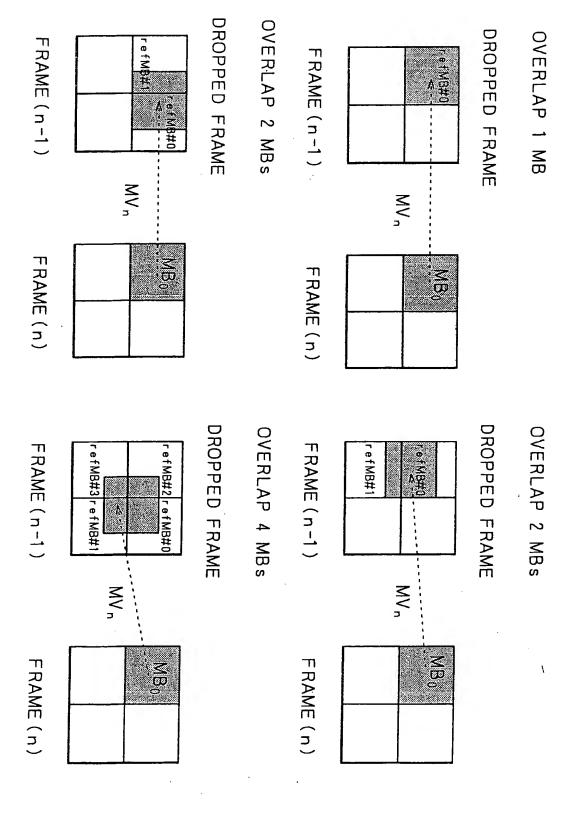


SELECT MV_{n-1} WHICH EXHIBITS MAXIMUM PARAMETER X (WHERE X IS ONE OF THE FOLLOWINGS)

- MB overlapped area
- ·MB overlapped area/Coefbits
- ·MB overlapped area/Q-scale
- ·MB overlapped area/(CoefbitsXQ-scale)

$$MV_n^* = MV_n + MV_{n-1}$$

FIG. 29 PRIOR ART



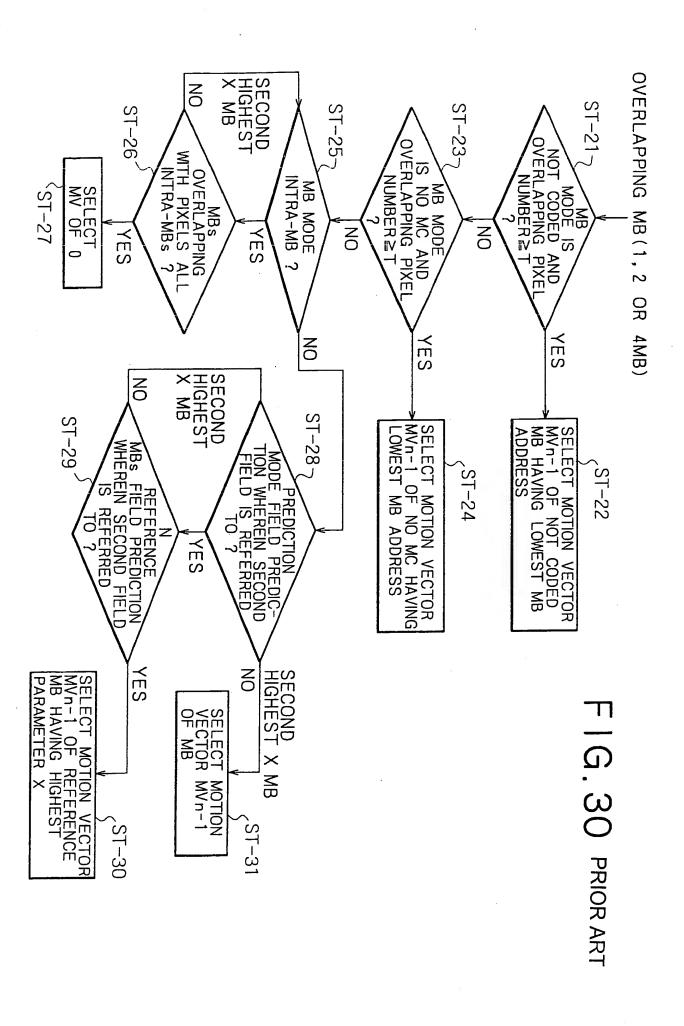
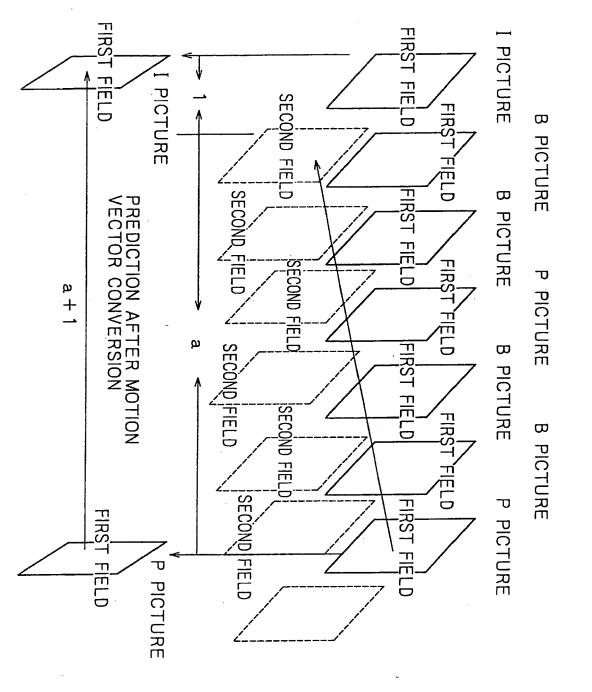
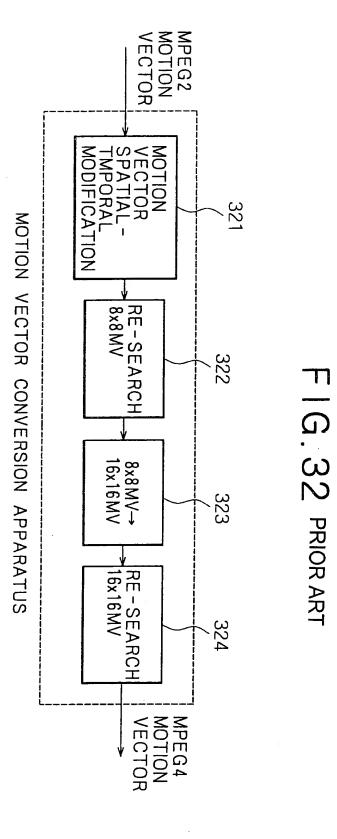


FIG. 31 PRIOR ART





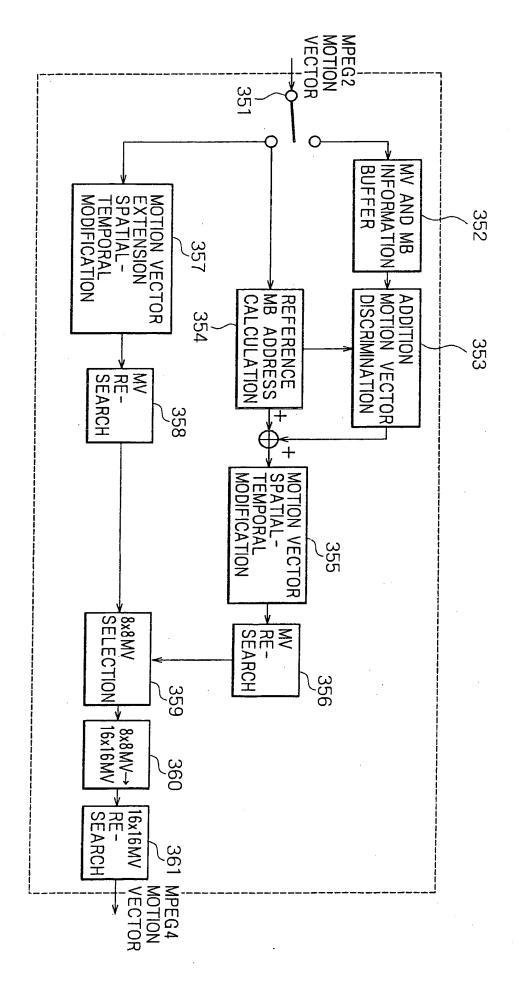


FIG. 33 PRIOR ART

FIG. 34 PRIOR ART

MOTION VECTOR CONVERSION APPARATUS

5fps MPEG4 MPEG4 10fps REFERENCE FRAME FRAME (n-2) P_{n-2} ס 2* MVn-1 MV_{n-1} MV_{n-1} FRAME TO DROPPED FRAME (n-1) MBo 2*MV,-1 BE MV n-1 MV ;-1 DUPLICATED ON I, MB AT THE SAME MOTION VECTORS OF Pn-1 FRAME MB ARE EXTENDED TO TWICE FOR TEMPORAL MODIFICATION PERTAINING FRAME MBo FRAME(n) POSITIONS AND

FIG. 35

MV_{n-1} IS DUPLICATED AND EXTENDED TO TWICE FOR TEMPORAL MODIFICATION

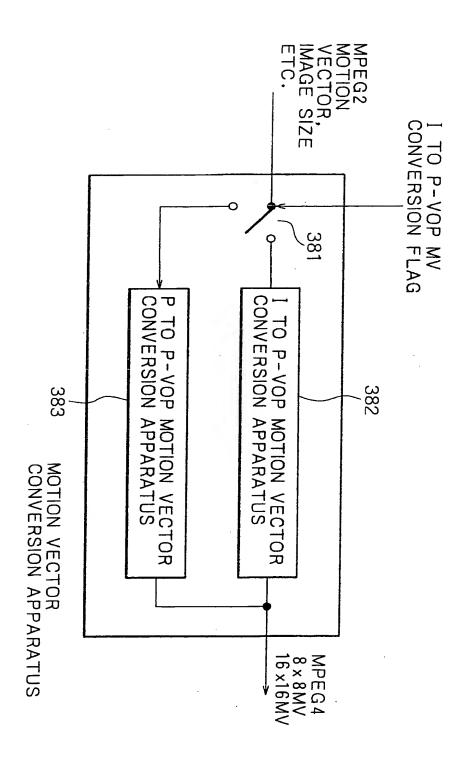


FIG. 36

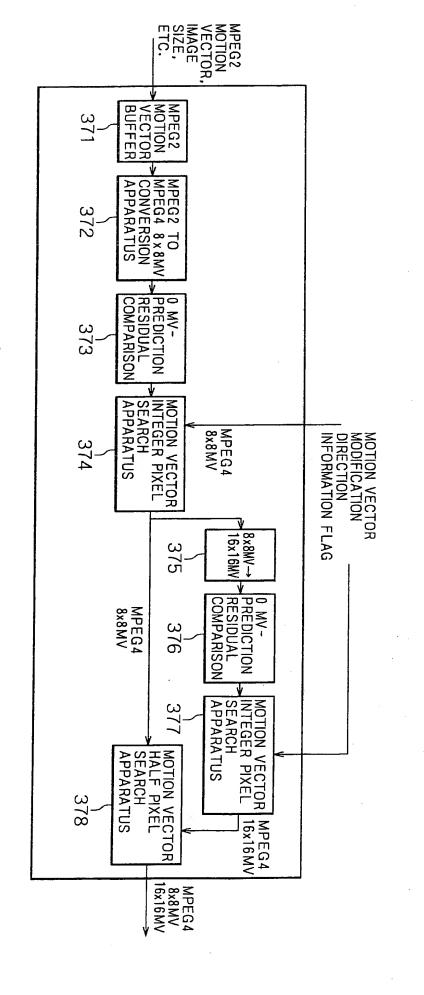


FIG. 37

I TO P MOTION VECTOR CONVERSION APPARATUS